

^{179}Os ε decay [1976Be62](#),[1970Ar15](#),[2000Ro41](#)

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 110, 265 (2009)	15-Nov-2008

Parent: ^{179}Os : $E=0.0$; $J^\pi=1/2^-$; $T_{1/2}=6.5$ min 3; $Q(\varepsilon)=3570$ 30; $\% \varepsilon + \% \beta^+$ decay=100.0

Others: [1973GoYJ](#), [1972Be89](#), [1968Be43](#).

[2000Ro41](#): measured E(ce), I(ce) using high-resolution magnetic spectrograph. source: product following successive decays from ^{183}Hg .

[1976Be62](#):Ge(Li) detector; measured E_γ , I_γ , $\gamma\gamma$ coin.

[1970Ar15](#):Ge(Li), scin detectors; measured E_γ , I_γ .

 ^{179}Re Levels

E(level) [†]	J^π [‡]	$T_{1/2}$	Comments
0.0 @	$5/2^+$		
65.39 & 9	$(5/2^-)$	95 μs 25	$T_{1/2}$: from Adopted Levels.
118.45 & 17	$(1/2^-)$		
284.03 & 16	$(3/2^-)$		
593.87 19	$(1/2^+, 3/2, 5/2^-)$		$J^\pi=(1/2^+)$ favored by 1976Be62 based on decay pattern and absence of γ to $(5/2^-)$.
816.70 22	$(1/2^-, 3/2, 5/2^-)$		
817.81 24			
877.80 22	$(1/2, 3/2, 5/2^-)$		
1429.38 21	$(3/2)$ #		
1448.82 23	$(3/2)$ #		
1562.3 3	#		

[†] Calculated by evaluator from a least-squares fit to E_γ .

[‡] From Adopted Levels.

$J^\pi=(3/2^-)$, possible three-quasiparticle state, based on γ -ray decay pattern and ε population from $1/2^-$ parent ([1976Be62](#)).

@ Band(A): $5/2[402]$ g.s. band.

& Band(B): $1/2[541]$ band.

 $\gamma(^{179}\text{Re})$

γ -ray intensities are not normalized because very few γ -ray multiplicities are known and many γ rays are unplaced; the decay scheme is tentative, and possibly incomplete. The scheme shown implies I_γ normalization=0.116 21 if $\alpha(65.4\gamma)=0.23$, and $\log ft \approx 5.3$ to the 1429, 1449 and 1562 levels.

E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J^π_i	E_f	J^π_f	Mult.	α^a	Comments
$^{x32.3}$ # 3	≈ 100							
$^{x36.8}$ # 3	≈ 20							
53.3 3	≈ 10	118.45	$(1/2^-)$	65.39	$(5/2^-)$	E2	66.3 21	$\alpha(\text{L})=50.1$ 16; $\alpha(\text{M})=12.7$ 4; $\alpha(\text{N}+..)=3.44$ 11 $\alpha(\text{N})=3.01$ 10; $\alpha(\text{O})=0.426$ 14; $\alpha(\text{P})=0.000418$ 10 Mult.: from L2:L3=240 50:290 70 (2000Ro41). other E_γ : 53.1 from 2000Ro41 .
65.4 1	600	65.39	$(5/2^-)$	0.0	$5/2^+$	(E1)	0.230	$\alpha(\text{L})=0.178$ 3; $\alpha(\text{M})=0.0409$ 6; $\alpha(\text{N}+..)=0.01121$ 17 $\alpha(\text{N})=0.00967$ 15; $\alpha(\text{O})=0.001474$ 22; $\alpha(\text{P})=6.51 \times 10^{-5}$ 10
165.7 2	43	284.03	$(3/2^-)$	118.45	$(1/2^-)$			

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^{179}Os ε decay **1976Be62,1970Ar15,2000Ro41 (continued)** $\gamma(^{179}\text{Re})$ (continued)

E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
$^{x181.5}_{\# @} 6$	$\approx 5 @$					
$^{x184.9}_{\#} 3$	17					
$^{x186.8}_{\#} 3$	≈ 5					Coin with 361 γ , 503 γ and 617 γ .
218.6 2	100	284.03	(3/2 ⁻)	65.39	(5/2 ⁻)	
224.2 6	6.5	817.81		593.87	(1/2 ⁺ , 3/2, 5/2 ⁻)	
310.0 3	29	593.87	(1/2 ⁺ , 3/2, 5/2 ⁻)	284.03	(3/2 ⁻)	
$^{x335.4}_{\#} 6$	5					
$^{x357.1}_{\#} 10$	≈ 6					
$^{x361.0}_{\#} 8$	≈ 7					Coin with 187 γ .
$^{x389.8}_{\#} 4$	7					
$^{x414.0}_{\# @} 10$	$\approx 6 @$					
$^{x436.8}_{\# @} 10$	$\approx 5 @$					
$^{x471.9}_{\#} 3$	16					
475.5 4	25	593.87	(1/2 ⁺ , 3/2, 5/2 ⁻)	118.45	(1/2 ⁻)	
$^{x503}_{\#} 1$						Observed in coin spectrum only; coin with 187 γ .
532.8 3	43	816.70	(1/2 ⁻ , 3/2, 5/2 ⁻)	284.03	(3/2 ⁻)	
551.6 3	30	1429.38	(3/2)	877.80	(1/2, 3/2, 5/2 ⁻)	
$^{x559.7}_{\#} 5$	4.5					
$^{x570.3}_{\#} 5$	7					
593.8 ^b 3	94 ^b	593.87	(1/2 ⁺ , 3/2, 5/2 ⁻)	0.0	5/2 ⁺	
593.8 ^b 3	94 ^b	877.80	(1/2, 3/2, 5/2 ⁻)	284.03	(3/2 ⁻)	
$^{x599.8}_{\#} 3$	42					Coin with 219 γ .
612.4 3	26	1429.38	(3/2)	816.70	(1/2 ⁻ , 3/2, 5/2 ⁻)	
$^{x616.5}_{\# @} 6$	$\approx 6 @$					Coin with 187 γ .
$^{x627.6}_{\# @} 6$	$\approx 6 @$					
630.9 5	21	1448.82	(3/2)	817.81		
633.4 ^c 5	28	1448.82	(3/2)	816.70	(1/2 ⁻ , 3/2, 5/2 ⁻)	
$^{x667.8}_{\#} 4$	21					
$^{x671.3}_{\# @} 5$	18 [@]					
684.7 5	67	1562.3		877.80	(1/2, 3/2, 5/2 ⁻)	
697.5 ^{&c} 4	30	816.70	(1/2 ⁻ , 3/2, 5/2 ⁻)	118.45	(1/2 ⁻)	
$^{x \approx 715}_{\# @}$	$\approx 9 @$					
$^{x717.3}_{\#} 10$	≈ 8					
$^{x730.7}_{\#} 7$	12					
$^{x739.1}_{\#} 5$	≈ 7					
745.3 5	38	1562.3		816.70	(1/2 ⁻ , 3/2, 5/2 ⁻)	
750.8 5	29	816.70	(1/2 ⁻ , 3/2, 5/2 ⁻)	65.39	(5/2 ⁻)	
759.4 3	49	877.80	(1/2, 3/2, 5/2 ⁻)	118.45	(1/2 ⁻)	
$^{x781.9}_{\#} 10$	6					
$^{x803.6}_{\#} 10$	7					
$^{x805.6}_{\#} 10$	11					
817.7 3	34	817.81		0.0	5/2 ⁺	
836.1 ^c 10	11	1429.38	(3/2)	593.87	(1/2 ⁺ , 3/2, 5/2 ⁻)	
$^{x962.1}_{\# @} 10$	$\approx 8 @$					
968.4 3	82	1562.3		593.87	(1/2 ⁺ , 3/2, 5/2 ⁻)	
$^{x996.4}_{\#} 5$	21					
1164.6 5	29	1448.82	(3/2)	284.03	(3/2 ⁻)	
$^{x1189.7}_{\#} 10$	9					

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^{179}Os ε decay [1976Be62](#),[1970Ar15](#),[2000Ro41](#) (continued) $\gamma(^{179}\text{Re})$ (continued)

$E_\gamma^\dagger$	$I_\gamma^\ddagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π
1278.6 10	≈ 6	1562.3		284.03	(3/2 ⁻)	1383.5 5	23	1448.82	(3/2)	65.39	(5/2 ⁻)
1311.0 4	60	1429.38	(3/2)	118.45	(1/2 ⁻)	1429.5 5	20	1429.38	(3/2)	0.0	5/2 ⁺
1330.3 4	81	1448.82	(3/2)	118.45	(1/2 ⁻)	^x 1444.1 [#] 5	25				
1364.2 5	19	1429.38	(3/2)	65.39	(5/2 ⁻)	1448.8 5	20	1448.82	(3/2)	0.0	5/2 ⁺

[†] From [1976Be62](#).[‡] From [1976Be62](#). $\Delta I_\gamma=15\text{-}20\%$ for intense γ rays, $\Delta I_\gamma=30\text{-}50\%$ for weak γ rays.[#] γ ray from ^{179}Os or ^{178}Os .[@] Assignment to ^{179}Os decay is uncertain.[&] Doublet.^a Total theoretical internal conversion coefficients, calculated using the BrIcc code ([2008Ki07](#)) with Frozen orbital approximation based on γ -ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.^b Multiply placed with undivided intensity.^c Placement of transition in the level scheme is uncertain.^x γ ray not placed in level scheme.

^{179}Os ε decay $^{1976}\text{Be}62,^{1970}\text{Ar}15,^{2000}\text{Ro}41$

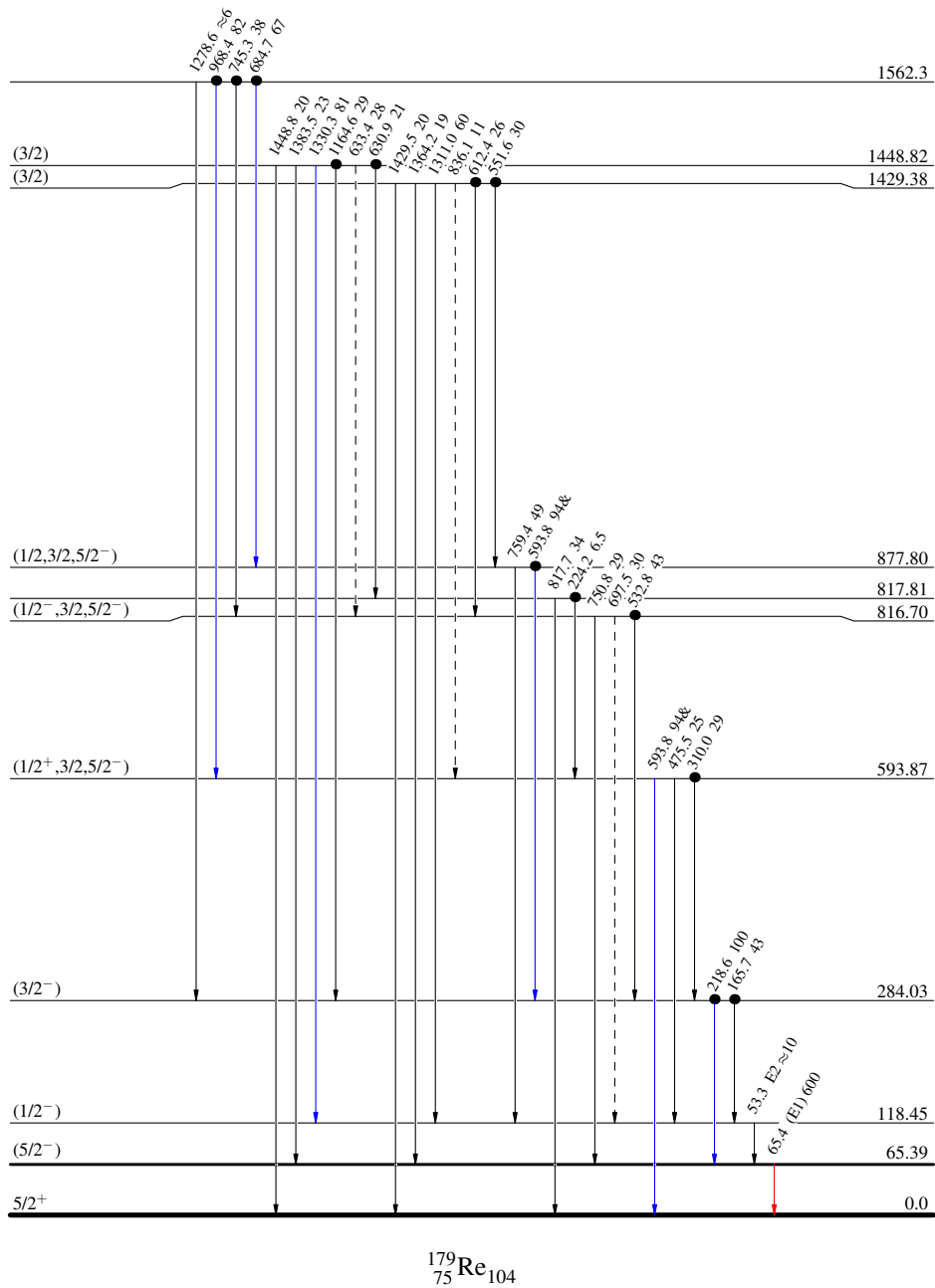
Decay Scheme

Legend

- $I_\gamma < 2\% \times I_\gamma^{\max}$
- $I_\gamma < 10\% \times I_\gamma^{\max}$
- $I_\gamma > 10\% \times I_\gamma^{\max}$
- - - -→ γ Decay (Uncertain)
- Coincidence

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

$\% \varepsilon + \% \beta^+ = 100$ $\xrightarrow{1/2^- \quad 0.0} \quad 6.5 \text{ min } 3$
 $Q_\varepsilon = 3570.30$
 $^{179}_{76}\text{Os}_{103}$

 $95 \mu\text{s } 25$

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